A CASE OF HYSTERIA IN WHICH A NEEDLE-PUNCTURE WAS FOLLOWED BY TYPICAL SYMPTOMS OF ASCENDING NEURITIS.[1]

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The following case presents points of interest to the neurologist, dermatologist and the general practitioner. To the first, the chief point of interest is the intimate relationship existing between the hysterical and the psychic state; to the second, the peculiar character of the skin lesions; to the third, the marked similarity of the symptoms to those of a traumatic ascending neuritis. The history is as follows:

The patient was a female, aged twenty-two years, a clerk. The family history is good, both parents being alive and well, though the mother has always been of a very nervous disposition. The patient in early life was neurotic, and between the eleventh and fourteenth years of her age had very frequent hysterical spasms, following an injury received by being pushed down a number of steps at school. She suffered much from her spine for several months afterward, but recovered entirely from all pain and ill-effects. There is no doubt as to the nature of the spasms which were very accurately detailed by the patient's mother, who also stated that they usually followed an outburst of temper when she was not permitted to do as she wished. After puberty these ceased, though she infrequently became very much excited, and then she usually developed mild delirium; with these exceptions, her health has been good until the present illness which dates from September 23d, 1898. During the past summer and fall, she had been under a severe strain from a mental and moral shock at the hands of a valued friend, and her health was much impaired thereby.

On September 23d, while using the sewing-machine, the needle pierced the forefinger of the left hand, entering on the radial side, passing obliquely downward under the nail and having its exit on the ulnar side about three-eighths of an inch from the end. When the needle was withdrawn there was no bleeding and no pain. A day or two later she heard reports of cases in which a similar injury resulted seriously, and on the evening of that day pain began in the finger end and gradually increased in severity until in two days it was extreme, and involved the entire arm to the shoulder. The third phalanx of the finger became swollen as did also the radio-dorsal surface of the hand. These parts were also red, hot, tender to the touch, and painful to any motion or pressure. Her physician advised opening the original wound, but as that part was not swollen, she would not consent to it. Poultices and unguents were applied, but to no advantage. Cold water, however, gave her complete relief from both swelling and pain for a week or more. During this time she could not work; she slept poorly, had no appetite, suffered with headache, especially in the occipital region, and was generally depressed.

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[1] Read before the Philadelphia Neurological Society, December 19, 1898.

When I first saw her (October 9th), two and one half weeks after the accident, she had just had a marked chill. Her temperature was 102°, her hands and feet were cold, and she was mildly delirious, but, during lucid intervals, complained bitterly of the pain in the back of her neck and the heaviness of her head. Heat to the head and extremities and a mustard plaster to the back of the neck, with trinitrin, gr. 1-100, by mouth, soon relieved her. She was also given grs. xx of potass. brom. as a hypnotic. On examining the arm the following features were noted:—The proximal phalanx of the index finger was red but not swollen; there was a large, red, edematous spot, about two and one half inches across, on the back of the left hand between the first and fifth metacarpal bones; also two similar spots on the radial and extensor surfaces of the forearm, and another on the outer side of the upper arm. These were uniformly erythematous, edematous, raised above the surrounding skin, had sharply defined edges, were without any appreciable thickening or induration, were hot and painful to the touch and did not pit on pressure. Excepting in the finger, there was no disturbance of sensation or motion and no enlargement of the axillary glands or of any of the lymphatics. A superficial infection, or more probably an ascending neuritis of the peripheral branches of the radial, was diagnosed and a hot solution of lead-water and laudanum was applied constantly for several days until the swelling and soreness had subsided. In a few hours, she became quiet and rested quite well the rest of the night. The next day her condition was much the same, except that her stomach refused to retain anything, even rejecting water as soon as swallowed. In the evening, on examining the arm, I was surprised to find the spots changed from the red color to a mottled blue, looking much as if the fingers or thumb had been used to bruise the parts. There were within the area occupied by the red spots five or six dense blue marks, or more properly speaking, deeply shaded blue marks, for between these dense spots, the tissues were slightly discolored. She also directed my attention to a sore spot directly under the left breast, which was the same in shape and color as those which had been on the hand and arm. It also possessed the same characteristics as the others, being painful, tender on pressure, red and edematous, but not indurated. In all of these spots, there was at first local elevation of temperature and this same was true of those which appeared subsequently. The same application was used on the spot beneath the left breast as on the former ones. Sulfonal gave excellent results as a hypnotic, and the next day found her much improved in her general condition, but very nervous.

By evening, the spot under the left breast had changed to the same mottled blue color as the others, and another red one appeared under the right breast, running the same course as those on the arm had done; the latter by this time had faded much and a few days later changed to a yellowish color, which persisted for a week or ten days. She remained in bed for a week, using the lead and laudanum solution upon the sore spots and taking the compound syrup of the hypophosphites as a general tonic.

At the end of the week the swelling had disappeared from the arm, pain was only occasional, and soreness was much lessened; her appetite was much improved and she slept all night without any drug. The arm was then rubbed every day and she began to go out of the house.

On October 23d, pain again began in the hand and arm, radiating to the shoulder; and the finger, dorsum of hand and entire arm became red and tender. The three tinctures (tincture of opium, tincture of belladonna, āā f ʒ ii ; tincture of iodine f ℥ ss) were applied locally three times a day, and the arm was put on a splint. Improvement was very decided under this treatment, and at the end of another week a silicate-of-soda splint was substituted so as to have a lighter and more serviceable dressing. At this time, a large red spot appeared over the left supra-spinatus muscle, and later changed as the others had done. From this time on, the arm grew steadily worse, becoming more swollen and painful. Tincture of iodine was used locally to make more decided counter-irritation, and on November 2d, a cantharides blister, 2x2, was applied just below the elbow on the radial surface of the arm. The arm was so swollen that the silicate splint had to be laid aside and the board used. Her sleep was much disturbed by the pain and soreness of the arm.

On the day following the application of the blister, there was considerable disturbance of sensation in the entire arm and slight loss of power; the entire upper limb was swollen and angry looking. That night grs. xx of sulfonal did not put her to sleep, but about twelve o'clock all pain ceased and the next day there was complete anesthesia of the arm below a line drawn about the shoulder joint from the apex of the acromion process and apparently complete loss of power. She felt "as though the arm was dropping away from her," and it had every appearance of an infected part, but there was no glandular involvement nor was there any constitutional elevation of temperature beyond a half degree or so. Dr. Wm. G. Spiller then saw her in consultation. He carefully examined her and took the electrical reactions of the limb, and finding no signs of degeneration and undoubted evidences of hysteria, he stated his opinion that the case as it then existed was one of hysteria. A pin was introduced into the arm a quarter of an inch without being felt by the patient, and its withdrawal was not followed by any bleeding, the hole remaining patent for a minute or so. The muscles responded almost normally to both the galvanic and faradic tests, requiring merely a stronger current on account of the swelling of the part. A strong faradic current was then passed through the arm and she was strongly impressed by the suggestion that her condition was not serious, would disappear and would not return. The splint was removed and all medication stopped. To reinforce the suggestion of recovery, a "strong" liniment of pure olive oil was given her to apply once a day without rubbing. Faradism was used every day, and by the fourth day the swelling had entirely disappeared, sensation was completely restored, and muscular power regained. With the exception of slight outbreaks of redness, swelling, or pain, she has remained well, and these outbreaks have been entirely dissipated within twenty-four hours by the use of faradism and suggestion. Another red spot appeared some weeks later over the left breast but soon disappeared. She has resumed her work in the office and is rapidly regaining good health.

The several points of especial interest in this case are: (1) The hemorrhagic eruption; (2) The differentiation of the functional neurosis from a true neuritis, and (3) The possibility of the occurrence of ascending neuritis following a non-suppurative traumatism.

The eruption was somewhat out of the ordinary, though there may be present in hysteria any of the lesions of the skin seen in other diseases from an erythema to a localized gangrene. Van Harlingen[2] published a very interesting classification of the hysterical neuroses of the skin, and cited some very rare and interesting cases. According to his description, this case was one of localized purpura or hemorrhagic ecchymosis, confined more especially to the distribution of the radial nerve. I have no doubt, as suggested by Dr. Spiller, that severe hemorrhages could be caused in this case by either direct suggestions or by auto-suggestion. The eruption began as a slightly edematous erythema and changed to the purpuric variety, the lesions looking as if they were the result of traumatism. There were at first the signs we usually recognize as those of active inflammation: heat, pain, swelling and redness, but the disappearance was not followed by desquamation of the skin, as has often been observed in true inflammation.

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[2] Van Harlingen, Amer. Jour. Med. Sciences, July, 1897.

Marinesco[3] has called attention to the influence of the brain over the vascular system. He says that such an influence can not now be doubted. Centers must exist in the Rolandic region which control the functions of the vessels, as lesions of this zone are followed by vascular disturbances. Hysteria especially offers evidence of this fact. The muscular atrophy of hysteria, the cutaneous or visceral hemorrhages appearing as the result of subconscious action, demonstrate the influence of the brain upon the vessels. He mentions a case at the Saltpètrière, in which to demonstrate the relation of various hysterical phenomena to auto-suggestion, Charcot placed two hysterical patients side by side, one of whom had blue edema of the lower limb. He ordered the other patient to observe attentively the edematous limb, and after some time this other patient also presented a similar edema. The only explanation of such a phenomenon is that the brain has control over the circulation, and this explanation will also apply to the other forms of disturbances met with in these patients. The higher brain centers are capable of influencing the lower centers sufficiently to produce marked pathological changes in the parts under the control of these lower centers; and when these same higher centers are stimulated by another form of impulse (as by healthy suggestion), they induce in the lower ones regenerative and reparative processes, as rapidly as they previously did the degenerative and diseased ones.

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[3] Marinesco, Semaine médicale, No. 55. p. 465.

The marked similarity of the symptoms in this case to those in a case of ascending neuritis rendered the diagnosis extremely difficult. As mentioned above, disturbances of the mental state, i. e., disturbance of the higher brain centers, may induce functional disorders which closely simulate and are, at times, indistinguishable from organic changes due to other causes, and the differentiation of the conditions may be a matter of great difficulty. In this case there was an injury, followed in three days by heat, swelling, redness, pain and disturbance of function, and the part involved corresponded almost accurately with the cutaneous distribution of the radial nerve. There was tenderness on pressure over the erythematous spots, but not elsewhere, all of which symptoms are characteristic of neuritis; however, the mental emotion to which the patient had been subjected, the existence of the spots under each breast, the anesthesia in sleeve form, the transitory paralysis of the entire limb, the tenderness in the ovarian regions, the history of previous hysterical attacks, and above all, the recovery within three or four days after the use of suggestion, clearly separate the functional from the organic condition.

In all cases of serious results following injuries of various degrees of intensity, the possibility of hysterical complications must be borne in mind, and the numerous coexistent stigmata sought as confirmatory evidence, or eliminated in the cases of organic diseases from other causes. The causes of the organic and functional conditions are much alike, and especially so in that traumatism is frequently present in both; but in hysteria the severity of the symptoms is not in proportion to the injury, but is commensurate to the shock or fright sustained. In my case, the injury was but slight, yet the patient's nervous system was so weakened by her previous experiences that the hearing of fatal results from a similar injury was sufficient to give rise to the subsequent conditions.

One other very important diagnostic point should be mentioned, and that is suggestion. Though a case may be clinically a typical neuritis, yet if it yields to suggestion, either conscious or hypnotic, it is a neurosis pure and simple. The use of this agent is a method of treatment, but in a border-line case it becomes a method of diagnosis as well, and is to be employed in all those doubtful cases in which a so-called non-septic wound or injury has antedated a short time the onset of the trouble.

There has been much controversy among neurologists as to the possibility of ascending neuritis following a so-called simple non-infected wound, such as this patient had. The earlier writers believed in traumatisms as an etiological factor in producing neuritis, and especially those injuries of the nature of punctures and stab. Erb[4] wrote: "An extension of the disease [neuritis] from its original seat not infrequently takes place, both downward and upward. The more important extension in the centripetal direction occurs either uniformly and continuously or in a sudden metastatic manner. In some cases, again, whilst certain parts of the nerve retain their normal character, others present circumscribed hyperemia, swelling and hypertrophy of connective tissue (Froriep, Rokitansky, Tiesler and others), and in this way the spinal cord may ultimately become affected (Tiesler, Feinberg)," and he recognized traumatism as one of the causes of the original injury. Former writers, however, were not generally particular to mention the part which infection plays in these wounds, but recently quite a discussion has arisen upon this point, and the question has been considered at some length by prominent men on both sides. Strümpell[5] believes that ascending neuritis only follows open wounds, such as stabs, cuts and gunshots, which are infected, and cites the experiments of Rosenbach and Kast to prove that perfectly aseptic wounds never cause spreading nerve-inflammation, and that subcutaneous injuries, as blows, pressure or luxations cause simply a mechanical disturbance of the nerve-elements, from which follow secondary degeneration, overgrowth of connective tissue and final regeneration. He admits that a neuritis may result from an aseptic wound, but maintains that such a lesion always subsides and shows no tendency to spread to other parts.

J. K. Mitchell (loc. cit.) calls attention to the fact that some time always elapses between the receipt of the injury and the beginning of the neuritis, and believes that this fact is significant of an infectious origin. This statement, however, is equally true for neurotic cases simulating inflammation, as the above history shows; for in most instances the patient learns of serious results following such injuries after the injury has been received, and several days may elapse before the characteristic symptoms develop. J. K. Mitchell also draws the following conclusions in regard to this condition:

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[4] Erb, Ziemssen's Cyclopedia.

[5] Strümpell, quoted by J. K. Mitchell, in "Remote Consequences of Injuries of Nerves," 1895.

1. Pressure, however brought about, whether by inflammatory exudate, or external injury by blow or weight, may be looked upon as a frequent factor, though not a constant one, in the production of spreading nerve-inflammation; but the presence of inflammation in the surrounding tissues, even in direct contact with the nerves, exerts, curiously, little bad influence.

2. The larger nerve trunks are more prone to present the phenomena of spreading inflammation after injury than small ones.

3. Neuritis may spread either centrifugally or centripetally, the latter in traumatic cases being much the more common form. He believes that the possibility of the ascent and descent of neuritis (though of rare occurrence) must be remembered in the treatment of nerve-traumatisms.

Drs. Howell and Huber conducted a series of experiments upon animals for the purpose of studying the process of repair of nerve-tissue, and in not a single case did subsequent examination show any evidence of neuritis having followed the traumatism occurring in the course of their operations, and this was probably due (as suggested by Mitchell, loc. cit.) to the fact that their work was done with strict asepsis.

S. G. Webber,[6] of Boston, recently reported a series of cases of localized neuritis, and states his belief that a traumatism may excite ascending neuritis, either continuous or metastatic, but in his cases does not note the presence or absence of septic conditions. He mentions three cases of injury to the hand or finger in which ascending neuritis seemed to follow. The first followed a severe burn of the hand by nitric acid, and the neuritis affected the whole arm and shoulder, and was followed by loss of power in the arm (whether cömplete or not is not stated). The second was one in which the symptoms followed unaccustomed pressure on the radial border of the forefinger during the process of raising a window. In this case, however, he states that a typical hysterical condition developed, which, of course, throws doubt upon the presence of ascending neuritis. The third case "had trouble in the whole arm from hitting the end of the middle finger;" the history is almost too incomplete to judge as to the true nature of the trouble, but as the patient was a woman and the injury slight and without any wound, the condition may have been hysterical. Of the three cases reported, but one seems to be a true neuritis.

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[6] Webber, Bost. Med. and Surg. Jour., Vol. CXXXIX, No. 18.

A very complete record of a case of ascending neuritis of infectious origin was recently published by Marinesco.[7] The patient suffered from gangrene of the leg, the result of some irrelevant cause, and sections of tissue taken from the gangrenous area showed the presence of streptococci with leucocytic infiltration and inflammatory degeneration of the nerve-fibers. Sections made from these nerves, taken from a region higher up the leg, also showed leucocytic or degenerative infiltration, but no streptococci. Sections of the cord were also made and degeneration of nerve-cells with leucocytic infiltration of nerve-fibers was found, but only in the region and side of the cord from which those nerves had origin. This seemed to show that the inflammation either had spread primarily and continuously along the nerves of the part, or was secondarily induced by the action of the toxins generated in the diseased area, with the evidence much more strongly in favor of primary spreading. This paper was read for Marinesco by Leyden, of Berlin, who said that he considered this case was positive evidence of the existence of ascending neuritis, following peripheral nerve disturbance, a fact which has long been contested. He also spoke of other cases of ascending neuritis of purulent origin which have recently been reported, as confirmatory of the above observation.

In the discussion which followed the reading of this paper, Oppenheim[8] said he believed the condition a very rare one; he had never seen a case of ascending neuritis involving the spinal cord. He further said he had seen but few cases of ascending neuritis, and even these were uncertain. He believed that most of these cases of so-called ascending neuritis were purely functional, being neuralgic, rheumatic, hysterical or neurotic. He mentioned one case of apparently undoubted neuritis ascendens following the running of a rusty needle into the finger with subsequent pain along the course of the ulnar nerve, but the symptoms yielded to suggestion. He knew cases of ascending neuritis had recently been reported following suppuration, showing that the condition might result from a focus of infection from suppuration, and in these the cord might possibly be secondarily involved, but he was skeptical in regard to such involvement.

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[7] Marinesco, La Presse médicale, No. 96, November 23, 1898.

[8] Published in the Vereins-Beiläge, No. 14, der Deutsche med. Wochenschrift, May 12, 1898.

Remak, in the same discussion, said he was not so skeptical as Oppenheim in regard to the spreading nerve-inflammation following an infective traumatism, but he was dubious as to its following a traumatism without the presence of suppuration.

Toxic substances circulating in the system have long been recognized as a cause of nerve-inflammation, and it is generally admitted that toxins from a focus of infection and suppuration may act in the same way; when, however, the affected nerve or nerves lie in close relation to the focus of infection or suppuration, the assignment of a cause (toxic or simply traumatic) may be a very difficult matter, though the natural inference would be that the toxins had acted directly upon the nerve structures, an inference which is also supported by the anatomical arrangement of the lymphatics and nerve sheaths. In every injury which causes a solution of the continuity of the tissues, there is local death of the edges of the wound, and while toxins are necessarily present in such a part, it is highly improbable that they act as a cause of neuritis ascendens, unless pus is actually present. Such an inflammation from such a cause has never been observed, though its possibility must be admitted.